

REMARKS/ARGUMENTS

In the Office Action mailed on December 2, 2009, claims 1, 3-11, and 16-18 are rejected. Additionally, claims 12-15 are allowed. In response, claims 16-18 have been amended. Support for the amendments to claims 16-18 is found in the current Application at, for example, original claims 1, 2, 5, and 6. Applicants hereby request reconsideration of the application in view of the claim amendments and the below-provided remarks.

Allowed Claims

As described above, claims 12-15 are allowed. Claims 16 and 18 have been amended to include similar limitations to claim 12. Because of the similarities between amended claims 16 and 18 and claim 12, Applicants respectfully submit that amended claims 16 and 18 are in condition for allowance.

Claim Rejection under 35 U.S.C. 103

Claims 1, 3-10, and 16-18 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Ro et al. (U.S. Pat. No. 7,283,498, hereinafter “Ro”) in view of Shirakata et al. (U.S. Pat. No. 6,618,352, hereinafter “Shirakata”). However, Applicants respectfully submit that the pending claims are patentable over Ro in view of Shirakata for the reasons provided below.

Independent Claim 1

Claim 1 recites in part that “*the control unit (175) is arranged for averaging the amplitude and/or phase of the data pilot carriers (PC) of which the corresponding training pilot carriers (TRPC) fulfill the predetermined quality criterion to provide an estimate for the common amplitude error and/or common phase error” (emphasis added). Applicants respectfully assert that Ro in view of Shirakata fails to teach the above-identified limitation of claim 1. Because Ro in view of Shirakata fails to teach all of the limitations of claim 1, Applicants respectfully assert that the teachings of Ro in view of Shirakata are not sufficient to establish a *prima facie* case of obviousness with respect to claim 1.*

The Office Action suggests that Shirakata teaches the above-identified limitation of claim 1. (See pages 2-4 of the Office Action). However, Applicants respectfully assert that Shirakata fails to teach “averaging the amplitude and/or phase of the data pilot carriers” (emphasis added), as recited in claim 1.

Shirakata teaches that the amount of phase change between two pilot carriers can be obtained by dividing a difference between the transmitter-receiver phase differences of arbitrary pilot carriers by the carrier frequency difference between the pilot carriers. (See column 17, lines 25-30 of Shirakata). In particular, Shirakata teaches that the difference between the transmitter-receiver phase difference of an arbitrary pilot carrier PCa and the transmitter-receiver phase difference of another arbitrary pilot carrier PCb is divided by the frequency difference between PCa and PCb, and then the amount of phase change with respect to the carrier frequency between the pilot carriers PCa and PCb can be obtained. (See column 17, lines 33-44 of Shirakata). That is, Shirakata teaches dividing the difference between the transmitter-receiver phase differences of two pilot carriers by the carrier frequency difference between the two pilot carriers. While Shirakata teaches how to determine the amount of phase change between two pilot carriers, this does not involve finding the average of the amplitude or phase of the pilot carriers.

Additionally, the Office Action states that “the phase difference of the nth pilot carrier is shown in figure 5. That phase value is then averaged to provide an estimate for the phase error.” (See page 2 of the Office Action). However, Applicants respectfully assert that Fig. 5 and the corresponding description in Shirakata does not teach “averaging the amplitude and/or phase of the data pilot carriers” (emphasis added), as recited in claim 1.

With reference to Fig. 5, Shirakata teaches phase rotations of data carriers due to frequency error Φ_f and timing error Φ_t . (See column 17, lines 51-67 of Shirakata). In particular, Shirakata teaches that the transmitter-receiver phase difference of an nth pilot carrier is represented by a symbol $\Theta(PC_n)$ and that the phase error between carriers is represented by a symbol $\Delta\varphi$. Shirakata further teaches that each data carrier has a phase rotation corresponding to $\Delta\varphi$ and $\Theta(PC_n)$. While Shirakata teaches how to calculate the phase rotation of each data carrier, this does not involve finding the average of the amplitude or phase of the pilot carriers.

Therefore, Applicants respectfully assert that Shirakata fails to teach “*averaging the amplitude and/or phase of the data pilot carriers*” (emphasis added), as recited in claim 1. Thus, Applicants respectfully assert that Ro in view of Shirakata fails to teach the above-identified limitation of claim 1. Because Ro in view of Shirakata fails to teach all of the limitations of claim 1, Applicants respectfully assert that a *prima facie* case of obviousness has not been established with respect to claim 1.

Dependent Claims 3-7, 9-11, and 16-18

Claims 3-7, 9-11, and 16-18 depend from and incorporate all of the limitations of independent claim 1. Thus, Applicants respectfully assert that claims 3-7, 9-11, and 16-18 are allowable at least based on an allowable claim 1. Additionally, claims 6, 11, 16, and 18 are allowable for further reasons, as described below.

Claim 6

Claim 6 recites “*comparing a phase of each of the training pilot carriers (TRPC) with an average value of phase of the training pilot carriers (TRPC)*” (emphasis added). The Office Action suggests that Shirakata teaches the above-identified limitation of claim 6. (See pages 3 and 4 of the Office Action). However, Applicants respectfully assert that Shirakata fails to teach the above-identified limitation of claim 6.

As described above, Shirakata teaches dividing the difference between the transmitter-receiver phase differences of two pilot carriers by the carrier frequency difference between the two pilot carriers. As described above with regard to claim 1, Shirakata merely teaches how to calculate the phase rotation of each data carrier, which does not involve finding the average of the amplitude or phase of the pilot carriers. Thus, Applicants respectfully assert that Shirakata fails to teach “*averaging the amplitude and/or phase of the data pilot carriers*,” as recited in claim 1. Because Shirakata fails to teach the above-identified limitation of claim 1, Applicants respectfully assert that Shirakata also fails to teach “*comparing a phase of each of the training pilot carriers (TRPC) with an average value of phase of the training pilot carriers (TRPC)*” (emphasis added), as recited in claim 6. Thus, Applicants respectfully assert that Ro in view of Shirakata fails to teach the above-identified limitation of claim 6. Because Ro in view of

Shirakata fails to teach all of the limitations of claim 6, Applicants respectfully assert that the teachings of Ro in view of Shirakata are not sufficient to establish a *prima facie* case of obviousness with respect to claim 6.

Claim 11

Claim 11 recites that “*a data pilot carrier and the corresponding training pilot carrier of the data pilot carrier have the same carrier frequency.*” Applicants note that the Office Action does not specifically address the subject matter recited in claim 11. (See pages 3-6 of the Office Action). Applicants respectfully assert that Ro in view of Shirakata fails to teach the above-identified limitation of claim 11. Because Ro in view of Shirakata fails to teach all of the limitations of claim 11, Applicants respectfully assert that the teachings of Ro in view of Shirakata are not sufficient to establish a *prima facie* case of obviousness with respect to claim 11.

Additionally, Applicants respectfully request that any subsequent Office Action should not be made Final because Applicants would not have had a chance to respond to the new rejection.

Claims 16 and 18

As described above, claims 16 and 18 have been amended to include similar limitations to claim 12. Because of the similarities between amended claims 16 and 18 and claim 12, Applicants respectfully submit that claims 16 and 18 are now in condition for allowance.

Independent Claim 8

Claim 8 includes a similar limitation to claim 1. In particular, claim 8 recites in part “*averaging the amplitude and/or phase of the data pilot carriers (PC) of which the corresponding training pilot carriers (TRPC) fulfill the predetermined quality criterion to provide an estimate for the common amplitude error and/or common phase error.*” Because of the similarity between claim 1 and claim 8, Applicants respectfully assert that the remarks provided above with regard to claim 1 apply also to claim 8. Thus, Applicants respectfully assert that Ro in view of Shirakata fails to teach all of the

limitations of claim 8. Because Ro in view of Shirakata fails to teach all of the limitations of claim 8, Applicants respectfully assert that the teachings of Ro in view of Shirakata are not sufficient to establish a *prima facie* case of obviousness with respect to claim 8.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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